WHAT IS CLAIMED IS:

1. In a method for the preparation of a semiconductor device by forming a patterned resist layer on the surface of a substrate by pattern-wise light-exposure of a photoresist layer of a chemical-amplification positive-working photoresist composition comprising (A) a compound capable of generating an acid by irradiation with actinic rays and (B) a resinous compound capable of being imparted with increased solubility in an aqueous alkaline solution in the presence of an acid, the improvement which comprises decreasing the number of defects in the patterned resist layer by using a photoresist composition of which a layer before the pattern-wise light-exposure exhibits reduction of thickness at 23 °C in a 2.38% by weight aqueous solution of tetramethylammonium hydroxide at a rate in the range from 0.15 to 0.20 nm/second.

2. The improvement as claimed in claim 1 in which the resinous compound as the component (B) of the photoresist composition is a copolymeric resin (B-1) comprising monomeric units of hydroxystyrene or α-methyl hydroxystyrene substituted by acid-dissociable groups for the hydrogen atoms of the hydroxyl groups and monomeric units of hydroxystyrene or α-methyl hydroxystyrene.

3. The improvement as claimed in claim 2 in which the acid-dissociable group is selected from the group consisting of tertiary alkyloxycarbonyl groups, tertiary alkyloxycarbonylalkyl groups, tertiary alkyl groups, cyclic ether groups and alkoxyalkyl groups.

4. The improvement as claimed in claim 3 in which the acid-dissociable group is selected from the group consisting of *tert*-butyloxycarbonyl group, *tert*-butyloxycarbonylmethyl group, *tert*-butyl group, tetrahydropyranyl group, tetrahydrofuranyl group, 1-ethoxyethyl group and 1-methoxypropyl group.

5. The improvement as claimed in claim 2 in which the molar fraction of the monomeric units of hydroxystyrene or α-methyl hydroxystyrene substituted by acid-dissociable groups for the hydrogen atoms of the hydroxyl groups in the copolymeric resin (B-1) is in the range from 10 to 60%.

6. The improvement as claimed in claim 1 in which the component (B) is a combination of a first resinous compound (B_1) which is a polyhydroxystyrene having a weight-average molecular weight of 3000 to 30000 with a molecular weight dispersion of 1 to 6.0 and substituted by *tert*-butyloxycarbonyl groups or tetrahydropyranyl groups for 10 to 50% of the hydrogen atoms of the hydroxyl groups and a second resinous compound (B_2) which is a polyhydroxystyrene having a weight-average molecular weight of 3000 to 30000 with a molecular weight dispersion of 1 to 6.0 and substituted by alkoxyalkyl groups for 10 to 50% of the hydrogen atoms of the hydroxyl groups.

7. The improvement as claimed in claim 6 in which the weight proportion of the first resinous compound (B_1) and the second resinous compound (B_2) is in the range from 10:90 to 90:10.